ELECTRICITY ON THE FARM *Magazine*

JUNE-JULY, 1955

Texas Evaluates Egg Cooling . . .
Surface Sewage Disposal System
4-H Training Yields Return . . .
How to Handle Plastic Pipe . . .
Drier Speeds Wheat Harvesting.

28th Year

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FARM FOOD BANK
Story on page 22

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Editor's Chat

IRRIGATE YOUR EDEN

Each man's farm or garden is his own little Eden, or it should be. And nothing is more discouraging than to have everything growing well when a drouth comes along to spoil the crop. This occurs with sufficient frequency to warrant some insurance against it and about the only practical insurance is irrigation. The day may come when we can seed the clouds and produce rain when and where we want it, but till it does the wise man will turn to his electric pumps and aluminum pipes and make sure he is not the innocent victim of fickle Fortune or the weatherman.

Take time to study the possibilities some irrigation may hold for you and irrigate your own Eden this year. Even in a small, experimental way there is some fun and satisfaction to be gained and perhaps some crop you may save.

HOW TO GET A VACATION

So many of us find it difficult to take a vacation that with the vacation season approaching it might pay those who seldom or never get one to find out just what a "vacation" is and maybe how to wangle one this year. Webster says, and I quote, "Freedom from a duty; intermission of employment." We might add on our own account that unless you do nothing at all, it is mostly a change of occupation.

Much of our happiness or contentment in this life depends on how one looks at things, one's attitude of mind. It is conceivable that a man who plays golf for the exercise might find swinging a scythe or a cradle even more fun from that point of view and perhaps demanding an equal amount of skill. You might suggest to your local dealer in sporting goods to stock a few scythes. Get his reaction and see how narrow an outlook some do have.

Everyone of us has freedom from duty to the extent that every time an automatic, motor-driven appliance operates it does some work for us. Refresh that thought in your mind when you turn on the silo unloader or gutter cleaner or perhaps the automatic electric range. It can't hurt you any and it may make you feel better; call it part of your vacation.

It is a fact that more machines and shorter hours have made it possible for nearly all of us to have more time for rest and recreation and with determination and some planning nearly everyone can work out some sort of a vacation for himself if he can adjust his attitude of mind to the kind of a vacation that is within his means. Try and figure out one for yourself.

FREEZING FOR FUN

Many of you either have a home freezer or hope to get one soon. It seems timely to remind you as the season for home freezing approaches that freezing food can be fun as well as economical and convenient.

Among the many advantages of having your own garden and freezer is the opportunity to grow the better flavored varieties commonly avoided by commercial growers because the same delicacy that makes for quality also makes them too perishable for profitable shipment to market. By the same token, having your own freezer in the home permits picking and packing when that quality is at its peak. An extra dividend is possible if one also freezes some food already cooked so that when unexpected company comes you can "strut your stuff" so to speak and either enjoy high living or display your domestic skill.

All the way—from selecting and growing the better sorts for your own enjoyment, through the operation of trying various ways of processing and preserving to the storing of cooked food and the serving of extra good meals, the home freezer can be a continuing source of pleasure and profit. Get all the fun you can out of your freezer as well as the convenience and economy.

Jim Ridout

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166-lb. upright freezer at the left
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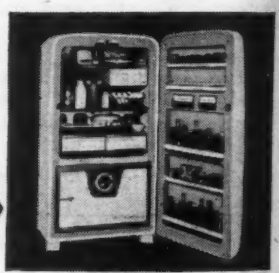

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Drier Speeds Wheat Harvesting

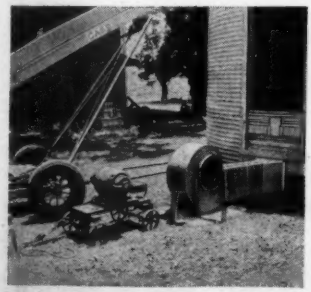
Ohio Farmer Combines 18% Moisture Wheat and Stores It Safely

By HEROLD BRUNS

There is a tendency for all of us to become excited over the unusual or the spectacular. This tendency may have implanted in the minds of some the idea that only the large producers of hay, corn, or small grain can successfully use drying equipment to aid in the harvest of such crops. However, that is not the case, as is being demonstrated wherever these crops are grown.

The wheat drying observations described in this article were made on my farm located in Defiance County, Ohio. This is in Northwestern Ohio, where we probably experience most of the harvest problems that show up elsewhere and maybe a few others that we can claim as strictly our own. Overcoming some of these hazards led to the installation of a grain drying system that can handle up to 1000 bu. of wheat at 18 percent moisture.

Because the quantity of grain involved was relatively small, the use of heated air and its related equipment was ruled out.



A backward curved blower, designed to deliver 3,400 cfm at 3 inches pressure, delivers air to the front of the chamber formed by the bin floor and ground. The fan is driven by a 3 hp portable utility motor. The motor is held in place by a rope and stake.

Plans were made with natural air doing the drying job. A circular metal bin 18 feet in diameter was selected. The floor was made of perforated metal sheets and placed about 16 inches above the ground level. This space between the floor and ground, enclosed by the bin walls, was used as a plenum chamber to which the blower was connected.

A 3 hp motor, used for other jobs around the farmstead, was available so a blower was purchased to fit the motor. A backward curved blower designed to deliver 3400 cubic feet of air per minute against 3 inch static pressure was selected. As the drying operations proceeded, this proved to be more than ample.

In 1954, 600 bushels of Seneca wheat were dried. Combining was started July 7 at which time the average moisture content was 17 percent. Excellent weather undoubtedly reduced this to 15½ or 16 percent before the harvest was completed.

To reduce labor, the wheat was loaded into the bin by means of an elevator through a vent opening in the center of the roof. It was leveled off at the end of each day's operation, making it necessary to enter the bin only once a day during harvest.

The fan was started in the afternoon and operated until about 9:30 P.M. each evening. Total elapsed drying time was about 30 hours. At that time, the moisture had been reduced to 12.2 percent which is well below safe storage limits. During the remainder of the summer and fall constant checks were made, but there was no indication of heating at any time.

The wheat was sold the latter part of November and when the bin was unloaded, the wheat flowed freely and evenly. There was no sign of caking that is sometimes evident when wheat is stored in non-ventilated bins at too high moisture content. Doing this job of drying required about 3 dollars worth of electric power or about ½ cent per bushel.

The "Wheat conditioner" on the Bruns Farm. It consists of a fan, motor, 18 foot circular bin, and grain elevator.

One benefit derived from drying that is often overlooked is the elimination of the old "guessing" game as to when cutting may be started. In the past, when the moisture test showed about 14½ percent, the game began. The question would be, "Is it time to start cutting today or is it better to wait another day?" Now, anytime the test shows 18 percent or less, it is time to begin cutting.

Farm Safety Week

President Eisenhower has proclaimed the week of July 24-30 as National Farm Safety Week. This year's safety slogan is YOUR SAFETY IS IN YOUR HANDS. Safety is a year round job for all of us. Let's be alert, use common sense, and stay alive.

Texas Evaluates Egg Cooling

College Ag-Engineers Find Controlled Cooling Pays Off

By ROBERT C. JASKA

To get top prices for eggs, you must market top quality eggs. Proper cooling of eggs and keeping them cool on the farm has much to do with maintaining egg quality. Egg quality at the buying station also depends upon how long the eggs were kept on the farm.

Several methods of cooling eggs had been observed on Texas farms. They varied widely—cooling in cellars, various types of evaporative coolers, milk coolers, and old incubators and meat boxes with mechanical refrigeration. Marketing schedules ranged from daily to once a week.

To determine the value of cooling eggs by different methods on the farm and marketing on different schedules, tests were conducted on a poultry farm producing commercial eggs near Hallettsville, Texas. This farm, located in South Central Texas, five miles from town, had 4500 laying hens in cages. The eggs on the farm were kept under three different temperature conditions. Some were kept in a mechanically refrigerated storage held at 55° F. This was an old incubator, 10 ft. by 8 ft. by 6½ ft., with approximately two inches of insulation in the walls. The refrigeration unit consisted of a 1 hp compressor with a blower type evaporator. Others were cooled in a basket type evaporative cooler located in a feed room of one of the laying houses. A third group was held at room temperature in the same feed room. The eggs from each of the storages were marketed on four different schedules – daily; every two days; every three days; and every six days. This gave twelve different storage and marketing conditions. An equal number of eggs was placed in each of the twelve baskets every day. Three baskets were taken to town every day; three baskets every two days; three baskets every three days; and three baskets every six days. All eggs were graded by the same government grader at the egg buying station in town. The curves in figure 1 show the per cent Grade "A" eggs obtained under the different storage conditions when marketed every two days.

For the week of June 6, the per cent Grade "A" eggs from the mechanical cooler was about 87%, from the evaporative cooler about 75%, and from the feed room, with no cooling, about 50%. For the four-month period, April 4 to August 1, the average per cent Grade "A" eggs from the mechanical cooler was about 90%, from the evaporative cooler about 75%, and from the feed room approximately 60%.

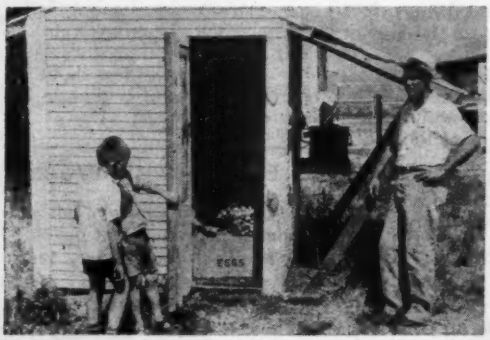
The average temperature in the mechanical cooler was 52.3° F., in the evaporative cooler it was 74.2° F., and in the feed room it was 77.3° F. Average relative humidities were—mechanical, 80.4%; evaporative, 79.7%; feed room, 71.3%.

The test covered the period April 4 to August 1, 1954. Total egg production at the farm during the test period was 644 cases. The prices paid for Grade "A" Large eggs ranged from 33 to 43 cents per dozen; for "B" Large from 28 to 35 cents per dozen; and for "C" Grade eggs, the price was 15 cents per dozen.

A study was made of the average prices paid by weeks at the collecting station for the various grades of eggs during the test period. Calculations were then made to determine the gross receipts if the total production from the farm had been kept and marketed under each of the twelve test conditions which were studied.

The bar graph in figure 2 shows the calculated value in dollars the farmer would have received for the total egg production from April 4 to August 1, 1954 from this farm under different storage conditions and marketing on different schedules.

Table 1 shows the difference in the value of the 644 cases of



Left: The home built egg cooler on the Tony Nehib farm, Gainesville, Texas, has 4 inches of insulation in walls. The cooler is equipped with a ½ hp "package" refrigeration unit located on right. **Right:** Egg cooler made from old incubator and 1 hp refrigeration unit. Eggs are being washed before placing in cooler.

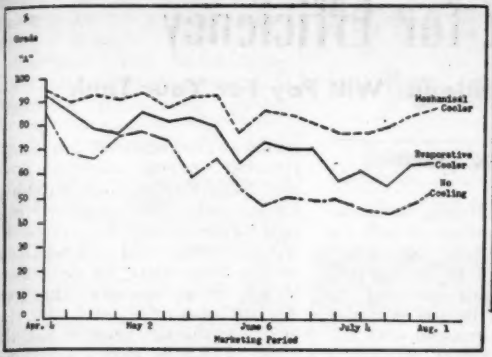


Fig. 1. Effect of type storage on percent grade "A" eggs (2 day marketing schedule).

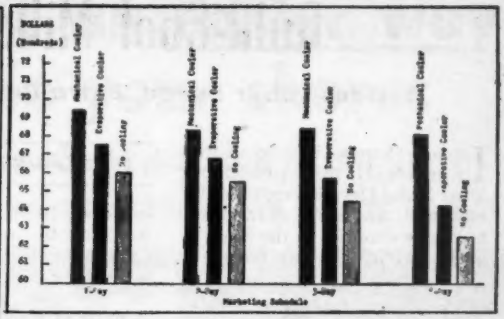


Fig. 2. Effect of type of cooling and storage conditions and different marketing schedules upon gross receipts for 644 cases of eggs marketed from April 4 to August 1, 1954 at Hallettsville, Texas.

eggs kept under different temperature conditions and marketed on different schedules.

If the eggs were marketed daily, the increase in gross income for the four-month egg production when cooled in the mechanical cooler would have been $196 over the evaporative cooler, and $332 over the no cooling. On the two-day marketing schedule, the mechanical cooler would have increased gross income $159 over the evaporative, and $275 over the feed room. On the three-day marketing schedule gross income would have been increased $266 in the mechanical cooler over the evaporative, and $397 over no cooling. On the six-day schedule, the gross income would have been increased $364 over the evaporative, and $550 over no cooling.

The electricity used by the mechanically refrigerated unit on this farm from April 4 to August 1, 1954 was 2185 kwhr. A total of 644 cases of eggs were cooled and the eggs were delivered six times per week. The number of cases ranged from 35 to 42 per week.

An estimate was made of the annual cost of owning and operating mechanically refrigerated units to fit the different marketing schedules for this farm operation. For the one-day and two-day marketing schedules the annual cost would be $118.20; for the three-day schedule $167.70; and for the six-day schedule $186.20.

On the one-day delivery schedule, the mechanical cooler would net $213.80 over no cooling, and $77.80 over the evaporative. On the two-day schedule the mechanical cooler would net $156.80 over no cooling, and $40.80 over the evaporative. If eggs were marketed every three days, the net income from the mechanical cooler would be $229.30 over no cooling, and $98.30 over the evaporative. On a six-day schedule the net income from the mechanical cooler would be $363.80 over no cooling, and $177.80 over the evaporative cooler.

This indicates that even if the evaporative cooler costs, both fixed and operating, were negligible, the mechanical cooler would be the most profitable on all of the marketing schedules.

The next question that the farm operator may ask is "How often should I market my eggs if I use a mechanical cooler?" On the basis of this one test, it appears that more frequent deliveries result in higher gross returns and lower cost of refrigeration facilities. With mechanical refrigeration during the period covered by this test, this operator would realize about . . . . . (More on page 30)

This complete egg-room cooling unit not only controls temperature but also humidity. They are available in various sizes.

TABLE I. TOTAL VALUE OF EGGS WHEN SOLD ON GRADE "A" MARKET (644 Cases—April 4 to July 31, 1954)

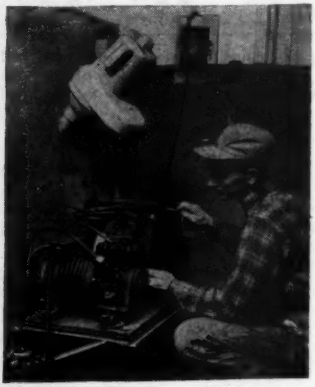
Type Storage	Marketing Schedule			
	1-Day	2-Day	3-Day	6-Day
Mechanical Refrigeration	$6940	$6825	$6834	$6792
Evaporative Cooler	6744	6666	6568	6428
Mechanical over Evaporative	196	159	266	364
Mechanical Refrigeration	6940	6825	6834	6792
No Cooling	6608	6550	6437	6242
Mechanical over No Cooling	332	275	397	550

Bulk-Cool Milk for Efficiency

Besides Labor Saved, Extra Dividends Will Pay For Your Tank

By ALLEN K. GILLETTE

Lapeer County is one of the principal milk-producing areas in the Detroit-Pontiac-Flint milkshed, and is one of the leading dairy counties in the State of Michigan. At present, two dairies have established routes serving bulk cooler shippers; the Brickley Dairy of Detroit and the Nye Dairy of Pontiac.



Refrigerating unit on bulk cooler. Motorized unit above compressor is the agitator.

A large portion of the bulk shippers are using loose housing pen barn arrangements. In the loose housing system, the milking parlor and milkhouse are constructed under one roof, with only a partition separating the two areas. This arrangement lends itself to pipeline milking because of the short run from stall to cooler. Some farms with stanchion type barns are still dumping their milk by hand into the tank. Eventually these folks plan to either install pipelines along the stanchions or convert to loose housing.

Let's take a typical dairy farm and follow the milk from cow to dairy. The milk flows directly from the cow through the pipeline and into the tank (by way of a strainer, of course). The milk is quickly cooled to 36-38° F. and it is ready for the tank truck.

The big bulk truck moves up to the milk house and the driver gets out. In the milk house he measures the amount of milk by using a calibrated rod. After noting the milk level on the rod, he converts this reading to pounds of milk by using a conversion chart furnished with the cooler. The amount of milk is recorded on a shipping slip, and a duplicate is left with the farmer. (This is one of the beauties of bulk cooling – the shipper knows exactly how much milk he sends each time, before it leaves the farm.)

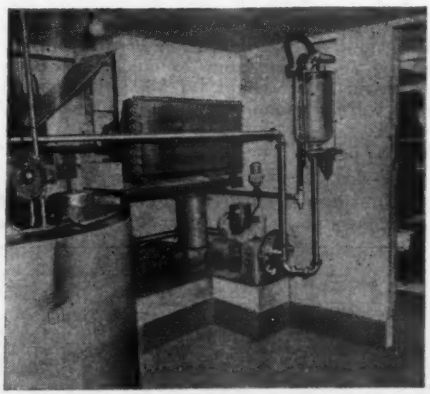
The driver then starts the agitator and goes out to the truck. He unreels the milk hose and an electric cord for the milk pump and pulls them into the milkhouse. (Note: It is a good idea to provide an opening in the milkhouse wall, with a door, to accommodate the hose and electric cord. This eleminates the necessity of leaving the main door open while milk is being loaded, thus admitting flies in the summer and drafts in the winter. The opening should be about 8" x 8" and at least 3 feet above floor level. A chimney clean-out door is ideal for this purpose.) The milk line is attached to the sanitary connection on the bulk cooler. The agitator has been running several minutes now and the driver is ready to take a fat sample. This sample is put in a refrigerated compartment in the tank truck and will be taken to the dairy plant for testing.

The driver then starts the electric pump on the truck and the milk is drawn from the bulk tank. The tank is washed down by the driver and the truck pulls away.

Don Winslow, who has a pipeline bulk tank combination on his farm near Imlay City, has this to say about bulk handling of milk:

"Why wouldn't I be enthusiastic about this set-up? I can milk 15 cows now in less time and with a lot less work than before and I plan to be milking 20 before long. I never lift a pail or a can—the milk goes from the cow through that pipeline and into the cooler. It is cooled down to 38° F. in no time and what milk it is! My bacteria count is way down—it doesn't have a chance to pick up any bugs.

"Besides assuring good milk and a lot less work, there are some other good points, too. In the first place, the dairy is charging me 10c a hundred less to haul my milk. Then they tell me that about ¼ pound of milk is lost when I ship in cans due to incomplete dumping and stickage. And this is a high-fat ½ pound. So besides the ½ pound per can gained, I gain about a tenth of a point on my fat test also. These two things mean about 8 cents. I'm doing at least 18c a hundred better now than before. Sure, the tank and pipeline cost quite a bit but that 18c will pay for it in a few years. The tank should be good for 20 years and



Power center for bulk milk handling system. Note the motor on circulating pump, compressor motor on wall, milker motor below compressor, and pipeline with pump and motor.

maybe this set-up will add a few years to my life; never thought of that."

Clarence White has this to say about his bulk-cooling set-up: "I figure my bulk tank isn't costing me a cent—the Brickley Dairy furnished my cooler. They are

The bulk tank driver adjusts a valve between the electrically driven milk pump on left and a truck tank compartment.

charging me the old can-hauling rate to haul my milk and the 10c a hundred that I would get credit for if I owned my own tank is applied toward the cost of the tank. The plan is set up on a 10 year amortization so at the end of that time the tank is mine. If at any time I want to buy the tank before this 10 years, I am credited with what I've paid as of that date. So even though I'm not actually getting my hands on the 10 cents hauling bonus, I am receiving it. Besides that, I'm getting credit for stickage, higher fat test, and better, cleaner milk."

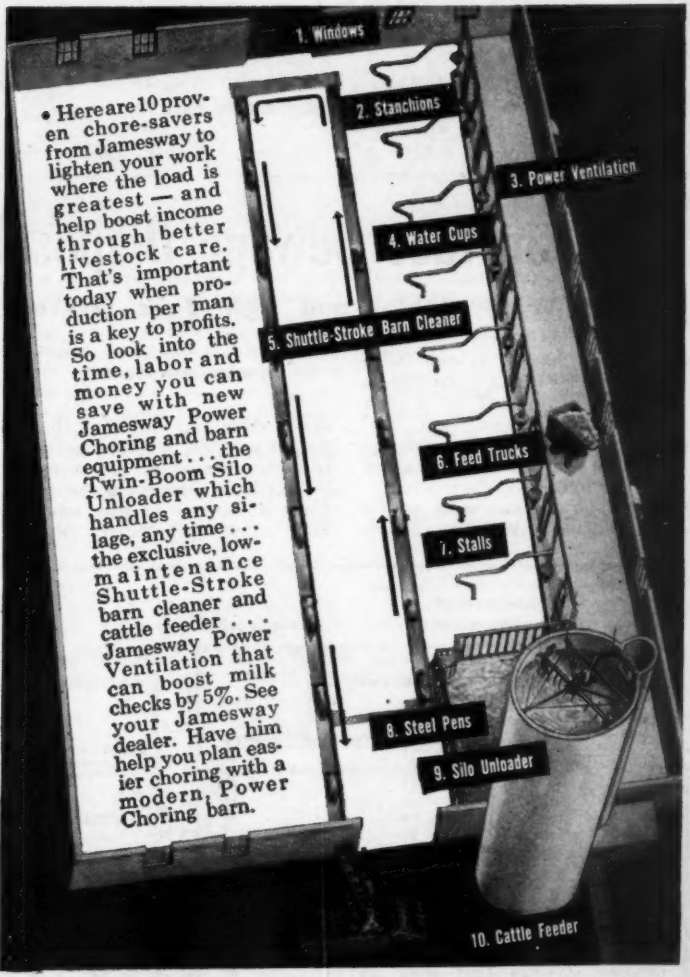
For most all farmers that have installed bulk cooling tanks, the story is the same. They wonder now why they didn't do it sooner.

AG ENGINEERS recommend that where wooden fence posts are used, an occasional steel upright should be provided for grounding purposes to protect livestock against lightning.

A light-colored paint on the interior walls and large windows in the farm shop will help make work done there easier and safer.

There's an easier way to do your chores

Jamesway helps with the plans, builds the labor-savers that make your old barn pay new dividends



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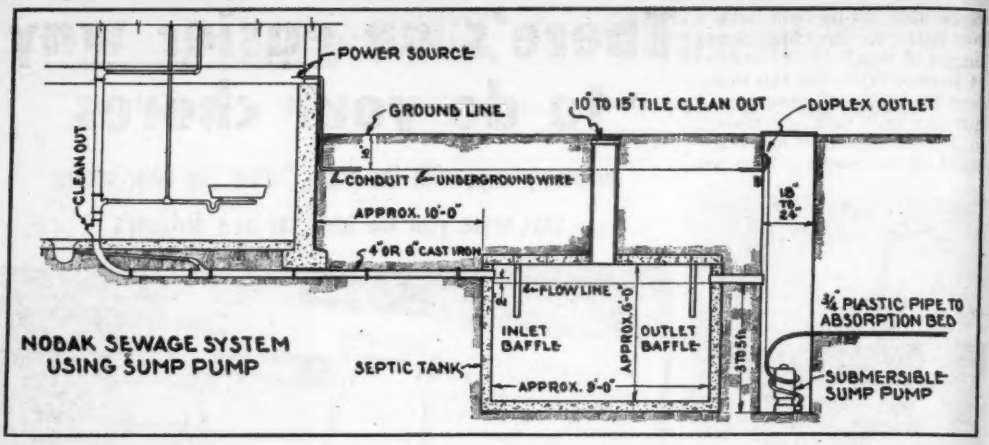


Surface Sewage Disposal System

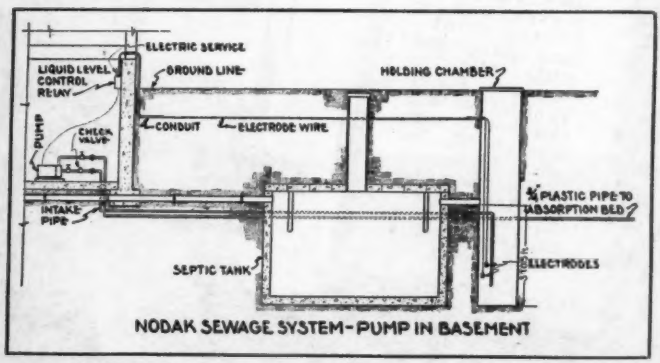
High Water Tables and Tight Soils Overcome With Nodak Plan

By ARTHUR H. SCHULZ

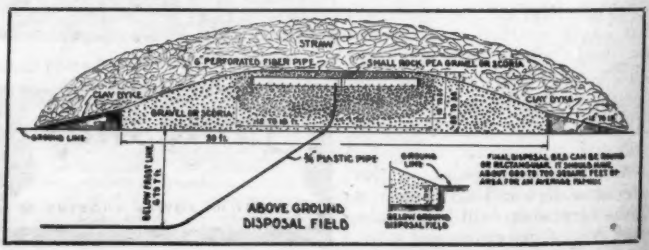
Are you having trouble with your sewage disposal system because heavy soil or a high water table around your final disposal field will not permit the digested sewage to soak away fast enough?

Agricultural engineers at the North Dakota Agricultural College have developed a sewage disposal system that uses an automatic electric pump to lift the digested sewage from the outlet of the septic tank up to a final disposal field built at or near the surface of the ground. The disposal field built at or near the surface of the ground takes advantage of the ability of most surface soils to absorb more digested sewage than deeper subsoils. Several hundred of these installations are in use. When built according to the plans as shown in this article they work very satisfactorily. The installation is called the Nodak System.

A conventional septic tank installation is used. However, the septic tank can be located at any depth regardless of the slope of the land or soil type. A holding chamber of 50 to 100 gallon capacity is built into the outlet line to receive the discharge from the septic tank. An automatic submersible sump pump is installed in the holding chamber or an automatically controlled shallow well pump is installed in the house basement.



Left: A standard shallow well pump may be used in place of a sump pump to remove effluent from the holding chamber. An electrode type liquid level control is used in this set-up.
Below: The final disposal field should be located at any convenient location that meets sanitation requirements. Height of bed should be kept to three feet or less.



A two electrode type remote control relay is used to regulate the pump when a shallow well pump is used.

Digested sewage flows into the holding chamber until the pump is turned on. The pump then pumps the sewage through a pipe to a final disposal field built at or near the surface of the ground. The surface disposal field is built from bank run gravel. A core of pea gravel or small rock installed around the distribution pipe helps insure an even distribution of digested sewage around the disposal bed. The bed is diked with clay or sunk into the surface of the ground about a foot to prevent sewage from seeping out from around the edge of the bed.

Although freezing has not been a problem, a covering of straw or four to eight inches of top soil over the disposal field provides added protection during extremely cold weather. A top soil will also permit grass and landscaping to be planted on the bed. Shrubbery or trees planted around the disposal field help to use part of the digested sewage.

Odors have not been a problem except where the pump has been set to pump so much sewage at one time that free digested sewage is forced to the surface of the bed. Re-setting the automatic controls on the pump takes care of this problem. A cover of top soil and grass helps to eliminate odors if they do exist.

This installation is particularly well suited to the remodeling of installations that are not working satisfactorily. Home owners in suburban areas have used the installation as it permits the septic tank to be located deep enough to accommodate a basement bathroom stool and still permits the use of a disposal field located at or near ground level where absorption is usually best. This Nodak system is being recommended by the North Dakota State Health Department for rural school installations. It is also well adapted to installations where sanitation requires that the digested sewage be moved a considerable distance.

"My Stainless Steel bulk tank will pay for itself in 3 years"

—says *Dairyman Robert S. Pike Cornish, Me.*

Milk from Mr. Pike's herd is piped directly into this 600-gallon Stainless Steel bulk tank from which it is picked up every other day. At peak periods the pick-up averages 550 gallons.

● Currently milking a herd of 85 registered Jerseys, Mr. Pike has been using the bulk milk handling system since June 1, 1954. His 600-gallon Stainless Steel farm tank has already made possible an impressive list of savings.

1. Hauling charges have been reduced 5 cents per cwt.
2. Losses through stickage and spillage have been eliminated.
3. Cleaning up takes only 15 minutes. No more men are required to handle the herd which has more than doubled since can-handling days.
4. Butterfat count has improved one to two points.

These are the dollars-and-cents savings that Mr. Pike feels will make the Stainless tank pay for itself in 3 years. But don't overlook such other benefits as reduced bacteria count and the elimination of hard, physical labor.

Because of its economies, bulk milk handling with Stainless Steel farm tanks is one of the fastest growing trends in dairying today. It's an idea you'll want to discuss with your neighbors and with the dairy to which you sell your milk.

For more information, mail the coupon below. United States Steel—as the producer of USS Stainless Steel from which bulk tanks are fabricated—has prepared a special booklet on bulk handling of milk. It's yours without obligation.

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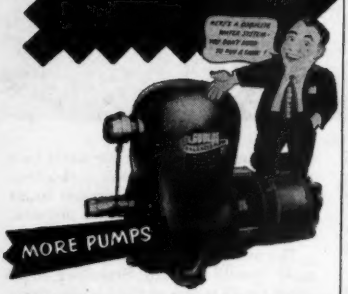

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How to Handle Plastic Pipe

Proper Selection, Application, and Installation Important

By **WILLARD R. ANDERSON**

Sales of plastic pipe indicate increased use of this product for farm water systems. To avoid mistakes in its application, you will be interested in learning as much as possible about its properties, its limitations, its advantages, and some of its installation features.

There are two general types of plastic pipe—rigid and flexible. This article will discuss only the flexible because it is the type most extensively used on farms today. Flexible plastic pipe is manufactured from polyethylene, a synthetic material which will resist rot, rust, and corrosion from electrolytic action. The smooth inside surface

One man can easily carry a 200-foot coil of two inch diameter plastic pipe.

of the pipe resists scale and lime build-up and is not subject to chemical attack from acids or alkalies present in water or in the soil where the pipe is buried. Polyethylene is soluble in oil, however, and cannot be used where it will come into contact with any oil base material.

The main advantages of plastic pipe are the ease of installation and the saving of time and labor. The cost is about the same as galvanized steel pipe but lower than copper tubing. A special two-tube pipe is made for deep well centrifugal-jet installations. Installation time is reduced tremendously by merely attaching the jet assembly to the pipe, unreeling the coil into the well to desired depth and attaching to the pump. The flexibility feature is also very desirable in pump locations with very little head room.

Another distinct advantage of plastic pipe is the ease with which it can be handled. Plastic pipe weighs about one-tenth the weight of an equivalent length of steel pipe. Because it is light in weight and flexible, manufacturers are able to package it in unbroken lengths of 400 or 500 foot coils for the smaller diameter sizes. This greatly reduces the number of joints needed when installing long runs. No special tools are necessary for installing plastic pipe. It can be easily cut with a saw or sharp knife. Special insert adapters with pipe threads on one end are provided to connect plastic pipe to threaded metal pipe or threaded fittings.

The pressure loss in plastic pipe is comparable to or less

Jet pump installation time is reduced by use of flexible twin tube plastic pipe. Limited headroom is no problem.

Trenches can be very narrow as few connections are needed and they can be made above ground.

than that of copper tubing and considerably less than ordinary metal pipe. This is due to the fact that the pipe wall is not "wetted" by water and little adhesion between the water and pipe interior is encountered.

Plastic pipe has not been used for farm water distribution systems long enough to obtain actual life expectancy data. The first applications were made in

Pipe is readily cut with sharp knife. It can also be sawed with a wood saw.

the early 40's but it has been used extensively only the past 6 to 8 years. Accelerated tests have been conducted and these results indicate that it should last, under most soil conditions, for 20 to 25 years or longer. There has been some feeling that plastic pipe may make water toxic to humans. Tests conducted by the National Sanitation Foundation in Michigan indicate that there has been no such condition caused by any of the 23 samples studied. The study included all of the plastic pipe being marketed for drinking water systems at the time the

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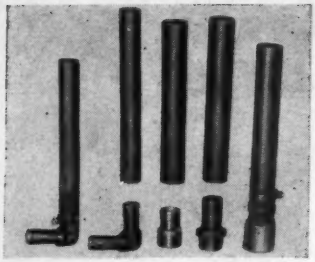
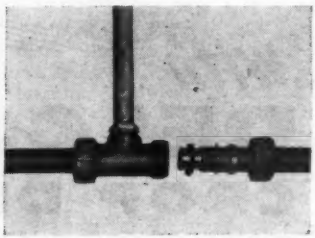


Fittings for use with plastic pipe are made from rigid plastic or brass.

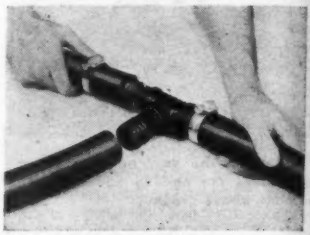
study was initiated in 1952. Other results of this study indicated that tastes and odors found in water exposed to plastic did not differ greatly from those in water exposed to galvanized steel and copper pipe. They also found that rodents would gnaw through plastic to get to food but would not eat the plastic.

There are two choices of fittings to use with plastic pipe. The insert-type plastic coupling has a serrated insert and is held in place with stainless steel hose clamps. The malleable iron compression-fit type has a copper insert or tubing stiffener. Both types should be installed with care. Pipe joint compounds should not be used with plastic piping as the oil base in the compound deteriorates the plastic. Regardless of the type of fitting used, the pipe should be "snaked" in the trench about 1 foot per 100 feet to allow slack for contraction or expansion, thus avoiding excessive strain on the fittings themselves. Before backfilling the trench, test the installed portion of the pipe for leaks by filling it with water under pressure of 20-30 lbs. When backfilling put pipe under pressure again to prevent collapsing. Also keep sharp rocks and other objects from bruising the pipe. It can be laid directly in open trenches and will conform to slight off grades or uneven contours without difficulty. Curves in the trench can be followed with ease.

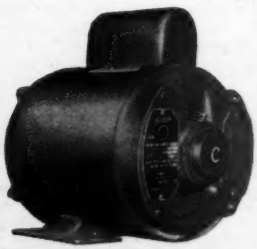


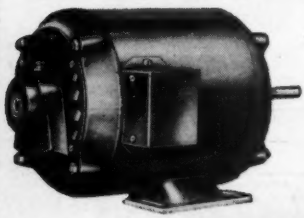
Mallable iron fitting is attached by drawing up end nut which tightens clutch ring over pipe.

When plastic is exposed to direct sunlight for extended periods of time, the ultraviolet rays will tend to oxidize the plastic materials and cause "checking" and general weakening of the pipe. Therefore, when used as a temporary water line, it should be laid to at least plow furrow



Serrated "T" fitting is installed merely by tightening hose clamp with screwdriver.





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depth. This also reduces the risk of damage from livestock and machinery. If it is necessary to run it under roads or driveways, protect it against heavy load pressures by running it through a short section of steel pipe. Since plastic pipe is resilient and flexible, it will withstand a certain amount of freezing and thawing without danger of bursting. Permanent lines should be laid below frost level, however. Plastic pipe is not designed for transmitting water above 125° F and therefore cannot be used for hot water lines. It is not generally recommended for use inside farm buildings. In any event, it must be used only as allowed by local building regulations and codes.

Much of today's plastic pipe is rated at about 75 pounds per square inch continuous working pressure which is sufficient for the average farm system. However, if your well and pumping equipment is located at a lower elevation than the farm buildings, necessitating a high pressure switch setting, it is entirely possible to have pipe pressures higher than plastic pipe ratings. If so, you should consider the use of metallic pipe. Remember, too, that plastic is an insulator and cannot be used as an electrical ground as can metal pipe.

By proper selection and installation, plastic pipe can give you good, trouble-free service for many years.

Temporary water lines can be laid 1½ ft deep with a tractor and subsoiler at a rate of up to 150 ft per minute.

Onions, kerosene or even apples may give a slight odor to eggs if kept in the same room.

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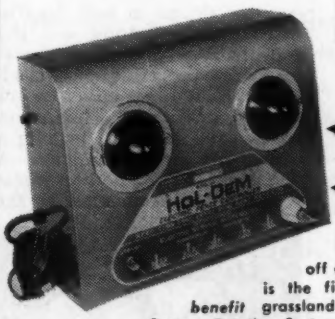

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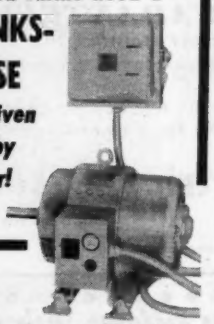

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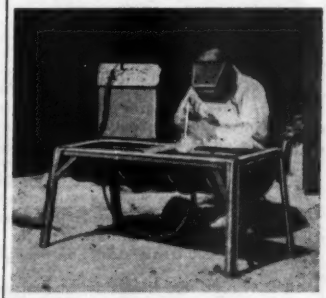
a name worth remembering when you want the best

Weld-Built Feeders

Ed Opdenhoff, of Kingfisher, Oklahoma, builds feed bunks in his farm workshop at a cost of about $8 each. He uses his electric welder to fabricate the units. They are made from 55 gallon oil drums. He cuts the ends out of one barrel and one end from the other. Then he cuts the drums in half, lengthwise. Before cutting out the ends, he fills the drums with water to prevent explosions. Each feed bunk requires either two or three half barrels. The halves are welded together, making a trough 6 or 9 feet long. A 2″ x 2″ x 3/16″ angle iron frame is made to accommodate the

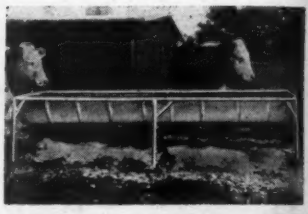


trough. The trough is welded to this angle iron frame, making a solid unit. Legs are made, each 24 inches long, from 1-inch pipe or angle iron. If pipe is used, one end of the pipe leg is flat to provide a larger welding surface. The legs are set at a slight angle to give the bottom a wider spacing than top for stability.

Note that he uses angle iron to form a lip on the inside upper edge of the trough. This prevents the cattle from "nosing" feed over the edge of the bunk. A small hole is made in the bottom of each ridge or groove of the drum to allow any water to drain from the bunk without upsetting of the bunk. Opdenhoff has been using two of these bunks for several months for feeding grain and finds them very substantial and satisfactory.

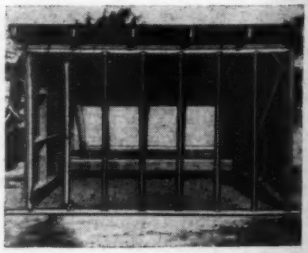
When Opdenhoff had trouble finding a calf feeder that was substantial enough to suit his needs, he went to the Oklahoma A & M Farm Structures Service at the college in Stillwater for help. They provided him with their Plan No. 23 for a cost of 25 cents from which he built the creep feeder shown here. The framework is made from 2-inch pipe, welded into a solid unit. Uprights are made from 2-inch pipe spaced 16 inches apart. Pieces of angle iron, 3/16″ thick by 1½″ wide and 3″ long, are welded to the outside pipes for bolting the 2 x 4's in place. The pipe across the bottom can be made in sled runner fashion to provide skids for making the creep feeder portable. This unit was made 8′ wide and 10′ long in order to go through vehicle gates satisfactorily. It is light enough to move with a tractor, yet sufficiently stable to resist over-turning by livestock.

The feed trough in the back was made from two 55 gallon steel oil drums which were cut



in half with the welder. They were then welded to the pipe frames in order to be held securely in position. The 40-bushel feeder hopper, walls and roof were made from lumber.

Opdenhoff used lumber which he had on hand and purchased



iron, bolts, and drums to construct his unit. Total cost for the hardware on his unit amounted to $34.68. He has found the unit to be substantial enough to keep the larger livestock out.

According to a recent survey, the SIX SWEETEST PHRASES in the English language are: "Dinner is served," "All is forgiven," "Sleep till noon," "Here's that five," "Keep the change," and "Okay, I'll buy."..... A garage in Ottawa, Illinois that specializes in rehabilitating crunched fenders displays this inviting sign: "May we have the NEXT DENTS?" .....Career Gal—one who prefers PLOTS and PLANS to POTS and PANS.....PERFUME AD: "Good for whatever HAILS you." .....No question about it, Robinson Crusoe STARTED the five-day plan. HE had all his work done by Friday ..... SODDEN THOUGHT: MANY a marriage TIE turns out to be a SLIP KNOT. And if we dare say it, you MIGHT call a MARRIAGE LICENSE a NOOSE PAPER. (Caw! Caw!) .....Fellow we know, who has been down on his luck lately, hits the peak in being a PROUD man. Said he, "Before I'D accept CHARITY, I'd BEG."..... EVERSTOPTOTHINK?—Nothing causes a man to go into debt FASTER than a SMALL raise ..... Vegetarian: a person who eats like a HORSE—no meat.....The dictionary is the only place where success comes BEFORE work..... PSYCHIATRIST: a man who gets rich on dreams that DON'T come true ..... SNICKERSNORT-OF-THE-MONTH: A teen-ager was overheard remarking to a friend: "I COULD go out with him until something better comes along—but WHAT if something better comes along—and sees ME going with HIM?" (Coronet) ..... It's never quite clear to us whether the gal on the back seat of a motorcycle is an acquaintance or an accessory.....Said the little Scotch boy to his father: "Aren't you PROUD of me. I just ran all the way home behind the streetcar and saved ten cents." "Vurra gud, my boy," said his father, "but NEXT time dinna fergit to run behind a taxi and save a DOLLAR." .....It's practically impossible for a man to keep himself and his business liquid at the same time .....OPERA: a play in which a man is stabbed in the back and INSTEAD of bleeding, he sings .....PARTING THOUGHT: You are really getting old when your work is less fun and your fun is more work.....

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24.5 quart Picture Window Hydrator—in the door
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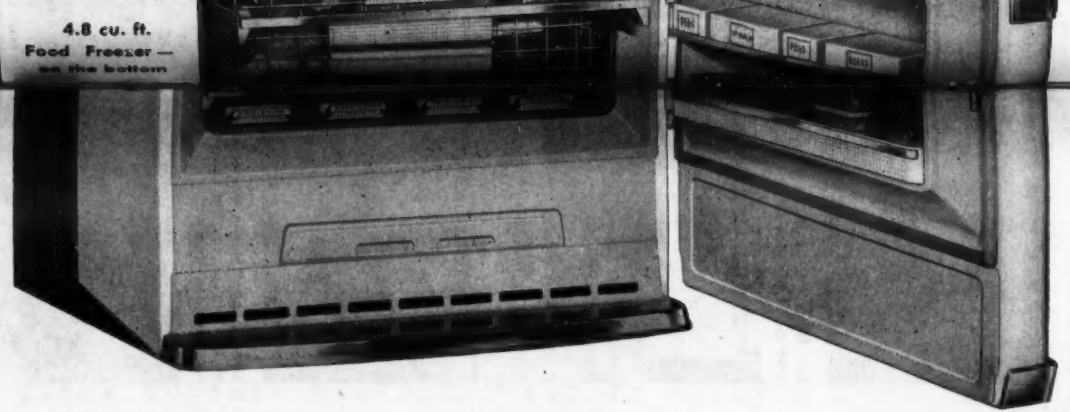

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We put the Hydrator in the door to swing down waist high for easy use. Pantry-Door stores butter, cheese, bottles, jars and left-overs.

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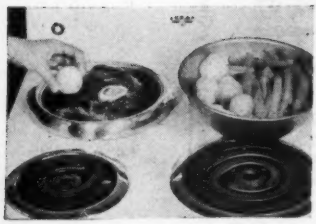
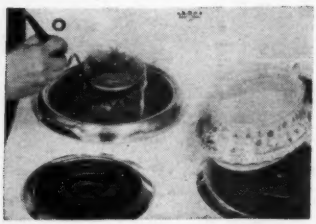
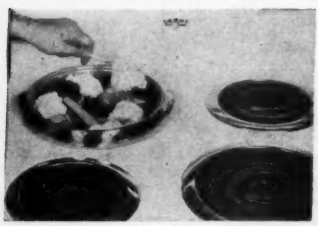


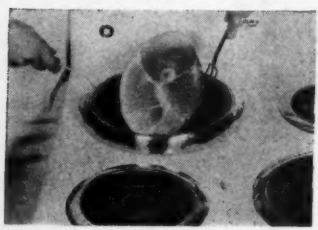
Prepare whole meals with meat, vegetables and steamed puddings cooked at the same time.



Simmer quantity of soup with improved flavor from long slow cooking.



Make family-size stew with dumplings. Simmer browned meat one hour, cook vegetables 40 minutes and steam dumplings 20 minutes.



Cook half ham or bulky meats.

Does your deep well cooker work for you? It certainly can. It is a thrifty, versatile unit of a range and can do many things. Recessed in a well, it holds heat and it is safe, too. There's no danger of a youngster grabbing the handle and tipping the contents.

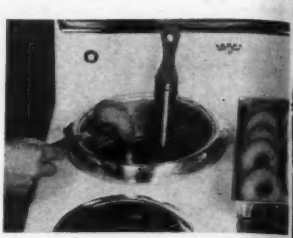
This multipurpose implement prepares a whole meal at a time, cooks foods in quantity, steams, boils, moist bakes, sterilizes, blanches, warms, deep fat fries, makes jelly, and is a hot water bath for canning. How nice it works in cooking bulky foods that do not fit into an ordinary kettle and in preparing pot roasts or other foods that require long cooking periods.

Since this is mainly a utensil for moist heat cookery, it is important to remember there should always be some moisture present. It may be in the form of water or other liquid, oil, drippings, or fat. For baking, only moisture-containing foods or casserole type combinations that have moisture are prepared in the deep well cooker. The only time there is no moisture used is for warming. Then a low heat is used and the lid left ajar.

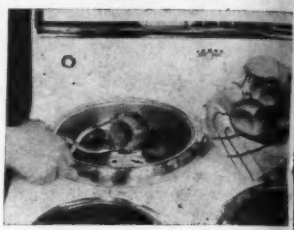
Soups, chili, baked beans, and stews may be cooked in quantity and very economically in the deep well cooker. This is an excellent way to prepare meals ahead. When preparing stew or soup for the evening meal, it takes little extra time to prepare it in quantity and freeze the rest for a future meal.

Whole meals can be prepared in the cooker without flavors intermingling. While foods are at cooking temperatures they are exhaling odors. It is only when they are cooling that moisture condenses and flavor of one food is carried to another. Therefore, it is important to maintain cook-

. . . . . (More on page 24)

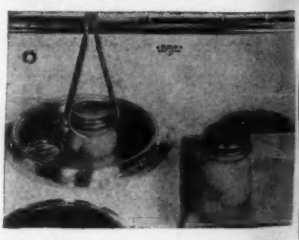


Fry foods in deep fat in recessed cooker. It's safe and clean.



Heat rolls on rack using low heat with lid ajar.

Blanch vegetables in wire basket prior to freezing or canning, according to recommended time.



Can fruits and tomatoes by hot water bath process and make quantities of jams and jellies.

XUM

FREEZE Your Lemon Meringue Pie

What is more refreshing on a hot humid day than the fresh tangy flavor of lemons, whether it is in lemonade, pudding, or pie? And what is better as a cooling dessert than creamy, smooth lemon meringue pie? This same pie can now be prepared in advance and frozen, just as easily as lemon chiffon and lemon cheese pies.

The next time you bake lemon pies, make several, eat one, and store the rest in the freezer. By making them ahead you'll always have a delicious dessert ready.

It's so easy to do, just make and bake the crust as you would for any pie, whether it is to be eaten that day or frozen. Use a regular or foil pie pan for the crust. Crumb or pastry crusts may be used. Cool thoroughly before adding the filling.

Prepare filling and pour into cooled crust. Be sure to cook the filling enough so it will hold its shape. The meringue will be made and topped on the pie later when it is removed from the freezer.

Wrap each pie separately for the freezer. Cover pie with a paper plate and secure in place with sticky paper. Place in a foil or moisture-vapor proof paper or pliofilm bag and fasten securely. Thus it is protected and pies can be stacked on top of each other in the freezer. They will keep nicely for three to four months.

Egg whites are frozen separately. Place three egg whites in a small container—this will give the right amount of meringue for a 9 inch pie. Be sure that there is no yolk in the white, otherwise it will not beat up lightly.

When you are ready to use the pie, remove the egg whites from the freezer 2 or 3 hours before you use them. This allows an hour for defrosting and an hour to bring them to room temperature. Or they may be thawed in the refrigerator which takes overnight. Then they are removed and brought to room temperature before beating. This is important to obtain light meringue. Be sure to beat them thoroughly for a high, light meringue that will hold up.

Next take the frozen pie from the freezer and spread with meringue. The pie does not need to be defrosted. Immediately after covering with meringue, place it in a 350° F. oven to brown for 15 to 20 minutes. The meringue spread on the pie acts as an insulator and the pie will cool quickly after removing from oven. Thus you will have a cool refreshing pie ready for serving.

Lemon Meringue Pie

1 9-inch pie shell, baked
½ cup cornstarch
1½ cups sugar
¼ teaspoon salt
1½ cups hot water
3 egg yolks
½ cup fresh lemon juice
1 teaspoon grated lemon peel
1 tablespoon butter

Mix cornstarch, sugar and salt in saucepan. Add hot water gradually and cook over direct heat, stirring constantly from 6 to 8 minutes or until thick and clear. Remove from heat and stir about ¼ cup hot mixture gradually into beaten egg yolks. Pour back in pan. Cook at low heat, stirring constantly, for 6 minutes. Remove from heat; add lemon juice, peel, and butter. Cool filling and pour into shell. Package and freeze. Store at 0° F.

Thaw egg whites that have been frozen separately and bring to room temperature before heating. Beat, add sugar, and spread on pie.

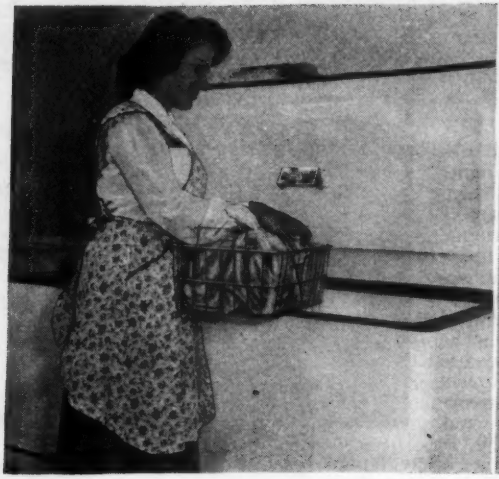
Meringue for 9-inch Pie

3 egg whites
¼ teaspoon cream of tartar
6 tablespoons sugar

Beat egg whites which have been defrosted and brought to room temperature until soft peaks form. Add sugar gradually, beating until meringue holds in firm glossy peaks. Spread meringue on pie. Bake at 350° F. for 15 to 20 minutes until golden brown. It is ready for serving. If it is held for any time, keep away from drafts.

We must remember that freezing will not change a poor product into a good one. The frozen version is never better than the original. For good results, remember to cook the filling sufficiently. When the filling is thick enough it will hold its shape and not "weep." The egg whites should be at room temperature and free of any yolk. Then they should be beaten thoroughly to insure a light fluffy meringue that will hold up.

Other lemon pies that freeze successfully are: chiffon; double crust; lemon cheese; and tarts. If a whipped cream topping is used instead of meringue it is placed on the pie before freezing. The pie is frozen and then wrapped for storage. This type must be defrosted before using.



Mrs. Victor Sorochinsky of Maine, New York likes her chest type freezer for the quantity of food it holds. It plays a vital part in feeding this busy farm family by being well stocked with home grown turkeys, ducks, geese, beef and pork. Last summer's supply of fruits and vegetables was used during the winter months. The time she saved in preparing fruits and vegetables for freezing as compared to canning is important to her.

The upright freezer is a favorite of Mrs. Phil Willis, Grass Lakes, Michigan, because it's so easy to select food for a quick meal on a busy day. She likes it, too, because it provides quantity foods at the fingertips and saves money in quantity buying. Used mainly for farm produced meats, it also holds fruits, vegetables and baked goods. For good results she uses a rapid turnover of properly wrapped, good quality products.

Farm Food Bank

An Upright or Chest Type Freezer

Shall I buy an upright or chest type home freezer? What size shall it be? Which is the most economical to operate? Which is the best buy for my family?" These are just a few of many questions that are in the minds of prospective home freezer buyers.

Up until 1953 most of home freezer production was the chest type. This was because of its development from the ice cream display case and the practical advantages of this type. As problems confronting upright freezers at that time were solved this type made its appearance on the market. Today every major manufacturer of food freezers is offering an upright model to the consumer. Selection between the two types becomes a matter of personal preference and space requirements. A 15 cubic foot upright model occupies an area about 30 inches square or 2½ by 2½ feet, while the chest type covers about 2½ by 5 feet. The smaller floor area used by the upright makes it desirable for kitchen placement. For equal storage space, the chest type probably costs less.

A chest model will hold more packages than the upright because the latter must be divided by shelving to make it usable. Large bulky packages are placed more easily in the chest than on the shelves. However, in the upright, more packages are in view and are easier to remove, thus making the contents more accessible. An upright has built-in features, which makes it more convenient. Its door lends itself to storage, making these packages more easily identified and removed and it also provides a space for storage of ice cream at spoonable consistency.

Recent Indiana Experiment Station studies showed that the usual amount of opening and closing of doors for either type had very little effect on electrical consumption, particularly if the freezer was well stocked. The opened door of an upright freezer loses more cold air than the opened lid on a chest type. Because less air transfers with each opening, the interior of the chest type frosts up more slowly. Pennsylvania Experiment Station studies indicated the differences in operating costs due to loss of cold air through open doors between the upright and chest types would be at the most only 20 to 30 cents per year.

Size should be governed by number of members in the family and way freezer is to be used. Each cubic foot of freezer space holds about 35 pounds. And five to six cubic feet of space is needed for each person in the household, if most meats, fruits, and vegetables consumed are stored by freezing. As size goes up original cost and power consumption for each cubic foot goes down, making larger sizes relatively better buys. However, this must be balanced against space requirement and storage needs.

Refrigeration units vary from

1/6 to 1/3 horsepower. The size required depends on size of cabinet, amount of insulation, and temperature to be maintained. With everything else equal, the larger unit can remove more heat per hour and can freeze larger amounts of food.

An exterior light or other temperature indicator is helpful in determining whether the unit is receiving electric current and the proper temperature is being maintained.

Whatever type of freezer is selected, it should be operated according to manufacturer's instructions as to defrosting and general care. A freezer should normally give long and dependable performance. However, it is important to deal with a local dealer who can adequately service your unit, should an emergency occur.

The Willis freezer not only furnishes food for meals, but also holds a ready supply of cool drinks and afternoon snacks. Here Mrs. Willis assists Phil Jr. in selecting ice cream while Larry prepares himself a cold drink of frozen orange juice. Both of these are bought in quantity to save costs.

Operating costs of home freezers depend on size of freezer, amount of insulation, and temperature of room. In the Pennsylvania studies they found a 15 cubic foot cabinet maintained at 0° or below in a 75° F. room consumed 75 to 135 KWH per month. And the cost of operating was about the same whether full or empty. The Indiana study of operating costs showed that freezers located in heated areas used from 11.25 to 17.35 per cent more electricity than those in unheated areas. The increase in use of electricity in heated areas was greatest for small freezers.

Amount of food frozen did not greatly affect amount of electricity used. Probably less than 10 per cent of electricity used was needed to freeze enough food to fill the freezer twice.

Age of freezer did not seem to affect amount of electricity used according to the Indiana study. This indicates that present types of home freezers maintain their efficiency and can be expected to give reliable service for many years with only periodic checks by a qualified serviceman.

A freezer maintains the original quality of food, it cannot improve on it. In order not to waste time, money, and effort, only top quality foods should be frozen. To keep this quality, food should be frozen rapidly and protected in airtight containers. Food dries out during storage if exposed to air. Follow manufacturer's instructions as to amount of foods to freeze at one time. Unless the freezer is designed with a large compressor to freeze quantities of warm material not more than 1½ to 2 pounds of fruit or vegetable for each cubic foot of size should be placed in the cabinet for freezing at one time. Packages should be spread out on freezer shelf or against coils for fast freezing. Generally, no frozen food should be held longer than a year.

Choose the type and size of freezer to fit your requirements, space available, family eating habits, and source of food. Then rapidly prepare and freeze only top quality foods in airtight packages.

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XUM

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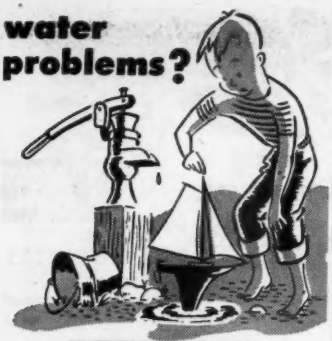

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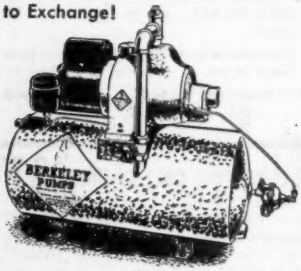

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Deep Well Cooker

. . . . . (Here from page 20)

ing temperature and never let these foods cool in the cooker.

It is most convenient to use foods that require the same time of cooking when preparing a complete meal. However this is not always possible or practical. If they require different times, start those that require the longest cooking first and add others later. Whenever the cover is removed heat is lost and when food is added it cools the contents. Thus it is necessary to switch to high heat until steaming resumes and then reset to cooking temperature.

Following are some recipes for use in the deep well cooker.

Boiled Dinner

- 2½ pounds corned beef brisket
- 2 cups water
- 6 carrots
- 6 medium potatoes
- 1 head cabbage, cut in sixths
- 6 onions

Cover corned beef with water for several hours to draw out the salt. Drain. Place corned beef and water in deep well cooker and cook for 2½ hours slowly. Add vegetables and continue cooking about thirty minutes or until vegetables are tender.

Beef Barbecue

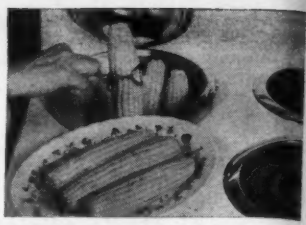
- 4 lbs. rump beef
- 4 tablespoons flour
- 2 teaspoons salt
- ½ teaspoon pepper
- 3 tablespoons fat
- ¼ cup water

Wipe meat with a damp cloth. Dredge with flour, mixed with salt and pepper. Brown meat in hot fat in cooker. Add water, cover and cook with low heat until nearly tender. Add barbecue sauce and cook for another half hour.

Sauce

- 3 tablespoons onions, chopped
- 2 tablespoons fat
- 2 tablespoons brown sugar
- 1 teaspoon salt
- 1 tablespoon lemon juice
- 1½ cups catsup
- 1 teaspoon dry mustard
- ½ cup celery, diced
- 1 cup water or soup stock

Fry onions in hot fat in 2-qt. saucepan. Add other ingredients. Cover and simmer for one hour. This sauce may be stored in a covered jar in the refrigerator. Serves 8 to 10.



Cook bulky and quantity foods such as corn on the cob, broccoli, chili and cocoa.

Chicken Soup

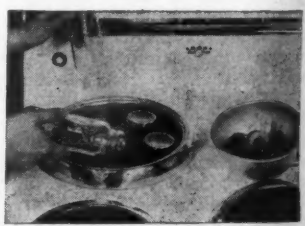
- 3 to 4 lbs. chicken
- 6 cups cold water
- 2 cups celery, diced
- ¼ teaspoon white pepper
- 2 teaspoons salt
- 3 tablespoons onions, chopped
- 3 tablespoons rice

Cut chicken in pieces. Place in cooker and add water. Gradually bring to the boiling point and simmer slowly for one hour. Add celery, pepper, salt, and onion. Cook until meat is tender. Add rice and boil an additional 20 minutes. Serves 8 to 10.

Sour Cream Doughnuts

- 1 cup sugar
- 3 eggs
- 1 cup sour cream
- 1 teaspoon vanilla
- 1 teaspoon baking powder
- 1 teaspoon soda
- ½ teaspoon salt
- 3½ to 4 cups flour

Beat eggs and sugar together. Add sour cream and vanilla and mix well. Sift dry ingredients and add to creamed mixture.



Sterilize baby bottles, canning pint jars, and jelly glasses.

Turn dough on a lightly floured board. Roll to ¼ inch thickness and cut with doughnut cutter. Fry in deep fat in cooker about 4 minutes at 375° F. Drain on absorbent paper. Makes 3 dozen.

Rapid cooling is important in preparing cooked meat for storage. Cool uncovered in refrigerator or in cold room with air circulation.

Safe Methods of

Cooling Cooked Meat

What care should be taken of cooked meat that is left-over from that prepared and served at the family table or meats cooked early for future service? To answer this question one of the leading meat producing companies conducted a series of tests to determine the best way to care for cooked meat and if any of these practices are really dangerous to the person who eats the meat.

Beef rib roasts, beef pot roasts, beef stew, beef and pork meat loaves, pork loin roasts, smoked hams, roast turkey, fried chicken, stewed chicken cooled in broth, and stewed chicken and broth cooled separately were used in the tests. Of these, family sized portions were cooled by the following methods comparable to home practices.

One method placed the hot cooked meat in the refrigerator as soon as it was served, which was about 20 minutes. The second left the cooked meat at room temperature to cool for about 2 hours and then put it in the refrigerator. In the third method the hot cooked meat was left at room temperature until it was cooled and then placed it in the refrigerator. The meat was left uncovered in the room and when placed in the refrigerator loosely covered with wax paper.

Results showed that meat left over after a meal should be quickly cooled, uncovered, in the refrigerator or in a cool room with good air circulation. Meat should not be left at kitchen temperature for over 2 hours, if possible spoilage is to be prevented.

Rapid cooling is the keynote to safer ways of preparing cooked meat for storage. To increase rate of cooling the meat they suggest cooling it and broth or gravy separately. Hot broth should be put in a bowl or wide mouth jar to hasten cooling. One-quart quantities cool quicker than larger amounts. A kettle of broth might be set in a pan of cold water to cool it rapidly before refrigeration. It is necessary to stir the broth frequently to prevent the formation of a coating of fat over the top and thus sealing in the heat. Both meat and broth should be left uncovered until cooled.

Pieces of meat that are spread out in a pan will cool quicker. Also large roasts may be cut in two.

Stuffing should be removed from poultry and each cooled separately. According to the tests an unstuffed turkey cooled

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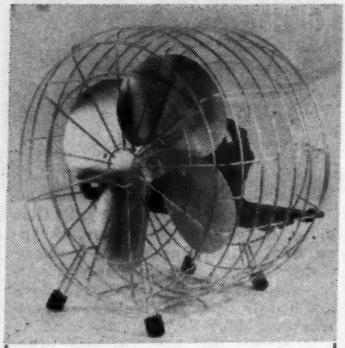

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as quickly as turkey meat removed from the bones.

Cooked meat should never be covered until thoroughly cool, whether it is cooled quickly at room temperature or in the refrigerator. A covered dish, foil or other wrappings retard cooling. When cooled, meat may be wrapped loosely or covered to prevent excess drying. Then it should be kept in the refrigerator until it is to be used.

Store cooked meats properly and use them within one or two days to enjoy best flavor, juiciness, and satisfaction without danger of spoilage.

Frost and Your Freezer

Frost and your freezer are not natural companions. They should be separated by defrosting when frost is about ½ inch thick. Accumulations of frost take up freezer storage space, make the freezer inconvenient to use, and decrease freezer efficiency.

It is best to defrost the freezer when it is nearly empty, but that may not be convenient. In any case food in the freezer should be removed, wrapped in paper, and stored in the coldest available place during the defrosting operation.

Frost may be removed by scraping. One caution—this should be done according to manufacturer's instructions as some inside finishes would be marked with a sharp edged scraper. However, it is wise, about once a year, to disconnect the freezer, defrost, and wash inside with soda water.

If frost on your freezer accumulates and requires frequent removal, it may be due to one of several reasons. The freezer may be opened more often than necessary, or left open for longer periods than necessary. Escape of moisture from improperly wrapped foods adds extra frost to the freezer and also changes quality of food. If frost accumulates around the door opening, it is usually an indication that a new door gasket is needed.

Defrosting of the freezer, when necessary, will make it more efficient and keep its contents in better condition.

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Sitting down to iron and organizing the steps taken makes it a much easier task on a hot humid day.

Ironing on a Hot Day

A very unwelcome chore on a hot day is a basketful of clothes to be ironed. There is no way one can avoid all the ironing, but there are some helps to make it easier. Remove clothes from the dryer as soon as it shuts off. By removing and folding them as soon as they are dry, many will be smooth enough to put away without ironing.

Starched clothes and any that are to be put away without ironing should be throughly dried. All others may be removed from the dryer at right ironing dampness. Those that need dampening may be sprinkled with warm water which spreads through the clothes more quickly than cold.

As you fold the dampened clothes, place hems and other double thickness portions to inside. Fold or roll them loosely and cover with a towel or place in a plastic bag. To wad or roll them tightly places more wrinkles in the garments.

Sit down to iron, whether you use an ironer or hand iron. The adjustable ironing board can be set to a comfortable ironing height for you. Another ironing aid is the new silicone and chemically treated ironing board cover. It reflects heat from the iron back on wrong side of the garment creating an ironing and drying effect from both sides. Absorbing no moisture, it always provides a dry surface.

A clothes rack or table within arm's reach will save getting up and down.

Take the weight off your feet, organize the ironing, and take your time. You'll be surprised how much easier it will seem on a hot day.

High Quality Frozen Foods

For high quality home-frozen fruits and vegetables, pick them two to four days earlier than for canning, according to research at Kansas State College. Cherries, gooseberries, peaches, pears, corn, beans, peas, and spinach were tested to determine if some varieties were superior for home freezing. Their aroma, appearance, flavor, texture, and retention of ascorbic acid were considered. Results showed that differences in maturity cause more variations than do different varieties of the same fruit or vegetable.

Heat in the canning process improved texture and palatability of fully mature fruits and vegetables, but frozen ones were no better than when they were harvested. Picking fruits and vegetables two to four days earlier reduces their yield, but improved quality of the frozen food is enough to warrant it.

...USES LESS ELECTRICITY!

● No one needs more water than farmers! For convenience and comfort in your home and for profit-boosting production on your farm you need plenty of water for kitchen, water heater, washer, and bathroom . . . for dairy, hen house, stock barn, lawn, garden and *fire protection!* No other pump gives you so much water for the money as the patented F & W VARI-JET for shallow wells. Soon pays for itself in household-savings and increased farm earnings. Whatever *your* need, there's an F & W Water System with comparable advantages. Each pump is factory-tested for pressure and capacity, each assures quiet, long-lasting performance. It will pay you to see your F & W dealer before you buy any water system! Send for free brochure showing complete F & W line.

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OSHKOSH, WISCONSIN

for Junior Partners

4-H Training Yields Return

Electrical Know-How is Contributing to This Young Farmer's Early Success

By **ROBERT VARVIL**

It was in 4-H Club work that John Hine of Martinsville, Indiana learned to put electricity to work on their farm. John spent nine years in 4-H Club work. He carried the 4-H Farm and Home Electric Project for two years and was a county winner in 1952. John now operates his father's dairy and hog farm. As a result of his experience in the 4-H Electric Project, John learned that to compete with electricity in doing the chores around the farm he would have to work for a few cents an hour. So when he started farming he decided to put electricity to work.

John Hine's first step in rewiring his farm was the installation of a pole metering system with 100 ampere switch at load center.

His first project was to rewire the farm. With the help of the local power supplier's rural representative, John designed a wiring system for the farm to meet future demands as well as present needs. A pole meter with a 100 ampere switch at the load center was the first step. Then lines of sufficient wire size were run to the house, barn, milk house and other out buildings. This provided John a good foundation for his wiring systems. Wherever needed, the buildings were rewired. Since he learned the basic principles of electricity in 4-H work he was able to do part of his own wiring. The barn now has five circuits. They are: a milking machine circuit, a heat lamp circuit, and three lighting circuits with provisions for additional load. The milk house has three separate circuits, one each for a water heater, milk cooler and lighting.

Once again John relied on his 4-H training in selecting electrical equipment for the farm. He installed a milking machine, milk cooler and dairy water heater to save labor and increase net farm income. By the use of these labor saving devices, John was able to increase the size of his herd from 25 to 50 cows in just one year. He was also able to produce grade A milk which means more money per pound. Other labor saving devices added to the dairy were electric heating tape to keep water pipes

John with the soldering iron he won as a 4-H Farm and Home Electric Project winner in 1952.

A Safety Project for J.P.'s

Every year more and more ice boxes, refrigerators, and freezers are being discarded. There is a strong temptation for children to play in these boxes. They make very dangerous "playhouses" because they are airtight and nearly soundproof. If someone gets into one and the door closes, they can't get out. There's no handle or inside release. And they can't live very many minutes inside one without air.

As a vacation project, keep your eyes open for these possible death traps. The only way to make such boxes safe is to remove the door. If the box is being stored temporarily, take off the latch or latch stop. Then the door can't slam shut and trap someone inside.

National Farm Safety Week is July 24-30. What could be a better safety project for your club or chapter than to survey your community and eliminate these death traps? **Hugh J. Hansen**

from freezing in the milk house, stock tank de-icers to eliminate ice chopping, and electric clippers for sanitation.

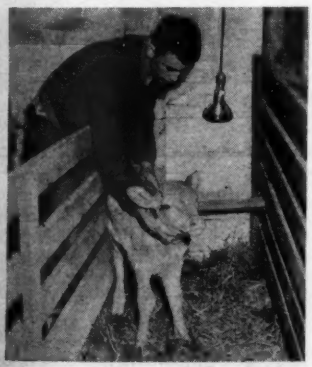
The dairy was not the only place that rewiring paid off for John Hine. He carries 15 to 20 brood sows and by using infrared heat lamps is now able to save at least one more pig per litter. The flexibility of his wiring system enables him to use heat lamps anywhere in the barn.

Hine raises only enough chickens for the family use or about 200. When the baby chicks arrive, electricity takes over. Through the use of infrared heat lamps, he keeps the mortality rate to a minimum. The chickens, at fryer stage, are put in the 20 cubic foot home freezer for storage until eaten.

Work in the house was also made easier by installing the home freezer and an electric clothes dryer. John remembered how important good lighting can be in the home from his 4-H training. He rebuilt 8 lamps so they would provide the correct amount of light for eye protection and give a more cheerful and comfortable atmosphere.

John's enthusiasm for electricity has not run out. He plans on adding a hay drier and silo unloader. By planning his wiring from the beginning he will be able to add the additional equipment knowing the wiring behind it will be sufficient to deliver full power. John says that he would be unable to farm his 225 acres without the help of electricity. His rewiring definitely paid off and will continue to do so in the years to come.

John decided a milk cooler was a "must" in order to produce grade "A" milk.



Hine says this calf was born in a weakened condition during extremely cold weather and would surely have died without the aid of infrared heat lamps.

We feel that the experience and knowledge John gained in his 4-H Farm and Home Electric Project has helped him to become a successful farmer at an early age.

The 4-H theme this year is: *Improving Family and Community Living*

2,058,144 boys and girls from 10 to 21 years of age are enrolled in 86,660 4-H Clubs.

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ISLAND AVENUE · BATAVIA 1, ILLINOIS
Jobber and dealer inquiries invited

Texas Egg Cooling

. . . . . (Here from page 7)

$115 more for his eggs if he marketed daily rather than every two days; about $274 if he marketed daily rather than every three days; and about $334 if he marketed daily rather than every six days. However, there are other factors, such as distance to market and type of farm operation that affect the net profit to be realized by marketing on different schedules.

Table II is a summary of the operation of mechanically refrigerated egg coolers located on farms in different parts of Texas. A total of 10,976 cases of eggs were cooled using 16,270 kwhr of electricity. This was an average of 1½ kwhr per case. The Ideal Hatchery at Cameron was a collecting station for the producers of that area. The electricity used at this station was .8 kwhr per case.

Rapid progress is now being made in the development, by refrigeration equipment manufacturers, of refrigeration equipment especially designed for cooling eggs on the farm. So called "Package Units" designed especially for egg cooling are available on the market today. These units slip into a wall opening in an egg cooler room and are ready to operate by plugging into an electrical outlet.

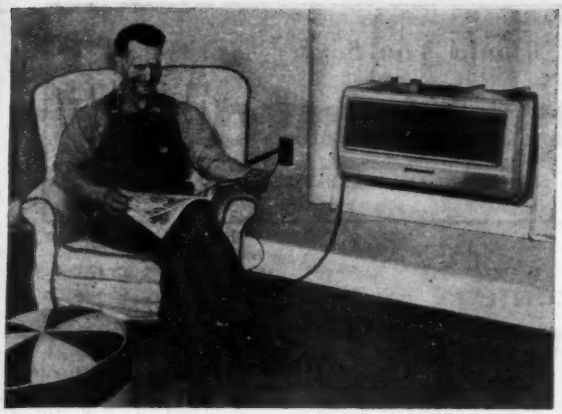
TABLE II. SUMMARY OF OPERATION OF EGG COOLERS IN TEXAS

Location	Period Covered	No. of Eggs Cooled (Cases)	KWHr Used	KWHr Per Case
Mayfield Farm Kurten	May 1953-April 1954	2,195	3,235	1.5
Mayfield Farm Bryan	May-September 1952	1,379	2,167	1.6
Mayfield Farm Bryan	June 1953-April 1954	2,643	2,527	1.0
Eby Farm Carrollton	June-September 1952	601	1,815	3.0
Eby Farm Carrollton	July-December 1953	2,800	2,386	1.2
Hatcher Farm Conroe	August-Nov. 1954	119	1,364	11.5
Arnold Farm Trinity	August-Nov. 1954	180	665	3.7
Tennison Farm Palestine	July-November 1954	889	1,711	1.9
Brandt Farm McGregor	June-September 1954	170	400	2.4
Total		10,976	16,270	1.5 (Avg.)
Ideal Hatchery Cameron (Collecting Station)	July-September 1954	696	567	.8

Behind each of the 8½ million farm operators, hired hands and family workers on farms in the United States, there lies an average capital investment of about $14,000, according to the U. S. Department of Agriculture. This amount is four times the 1940 average and does not include approximately $5000 per worker invested in houses, automobiles, household goods and savings.

Rodents don't like a clean farmstead. For them it means fewer hiding places and less food. They will move on if their food supply is cut off.

The farm population in the United States reached a new low of 22,000,000 persons in 1954. Number of farm residents now is approximately 13.5 per cent of our population.



Farmhouse Air Conditioner

"The day our room air conditioner was delivered it was 96° in the shade and we were putting up hay. It was installed during the noon hour and the room was so comfortable it was a job getting the hired help and myself back to the field." Those are the words of Merrell L. Zellers of Bloomington, Indiana.

Zellers says this room air conditioner keeps his living room and bedroom 15 degrees below outside temperatures. It gives him a place to rest and freshen up after a tiring day's work and he can get a good night's sleep in hot weather which is very essential to a farmer.

Mrs. Zellers is also very enthusiastic about their room air conditioner. She says "It is the biggest morale builder on the farm." She also believes the benefits they have received, as compared to the low operating cost, makes their room air conditioner one of the best investments they ever made. They plan to add another in the kitchen in the near future.

More Milk Per Cow Now

In every State except three, milk production per cow in 1954 was above the 1945-49 average and in some 40 States production per cow was equal to or up one or more percentage points from 1953, according to the April 18 Dairy Situation Report of the Agricultural Marketing Service. For the U. S. as a whole, production per cow in 1954 was 10 per cent higher than the average for 1945-49. By regions, it was 11 per cent higher in the North Atlantic States; 14 per cent higher in the East North Central States; up 10 per cent in the West North Central States; up 7 per cent for the South Atlantic; up 3 per cent in the South Central States; and 13 per cent higher in the Western States.

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INSECT ELECTROCUTOR is portable, easily attached wherever most needed. Operates on regular 110-120 volt A.C. current. Foolproof, all-metal construction, 24" x 14" x 5". Simply plug in.

Have comfortable, insect-free porch, rooms all summer . . . clear barns, sheds of disease-bearing insects. Just 30¢ a month to operate. Buy two . . . protect both home and barn. Mail check or money order to:

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Readers' Service Dept.,
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Please have sent to me, without obligation, the names of manufacturers of:

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R.F.D.....State.....

What Would You Say?

Rhyme Contest

FUN FOR ALL—the whole family can take part in this contest.

RULES—JUNE-JULY CONTEST

Seven cash prizes will be awarded for the best last line to complete the verse in the coupon below. Your suggestion should rhyme with the second line.

The first prize will be $25 cash; the second prize $10. In addition, five consolation prizes of $3 each will be awarded for the best last line furnished.

In case of a tie, each winning contestant will receive the full cash prize to which he or she is entitled.

All members of the farm family to whom this magazine was sent may enter but each contestant may submit only one line.

Question "A" must be answered.

Entries must be sent to the Contest Editor, ELECTRICITY ON THE FARM Magazine, 8 So. Dearborn Street, Chicago 3, Ill., before July 15.

The decision of the judges is final and all entries become the property of ELECTRICITY ON THE FARM Magazine.

Winning names and entries will be announced in the November issue.

Send your entry on the coupon or make out a similar form on a plain sheet of paper or government postcard.

A lady was in quite a sputter
She hated to churn to get butter
Though her arms sure are strong
They can't hold out for long
? ? ? ? ? ? ? ?

My suggestion for a last line to the above verse is:

.....

(A) Have you installed any plastic pipe on your farm?.....

If yes, for what services?.....

.....

.....

My name is.....

R.F.D...... **Post Office**.....

County..... **State**.....

Awards for March Contest

"When you've snowballs the 4th of July
"I'll wed you", said snippy Miss Fry
So he bought a new freezer
And wildly did squeeze her
? ? ? ? ? ? ? ?

The Winning Last Lines

FIRST PRIZE—$25 CASH

"Two beauties he bagged with one buy"

Mrs. Barbara Rodman
West Breitung
Iron Mountain, Michigan

SECOND PRIZE—$10 CASH

"On electricity, not luck, he'd rely"

Judith Horton
Eden, New York

Five Consolation Prizes—$3 Each

"Saying 'Watts get the credit, not I'"

Edna Masters
R.F.D. 2, Halstead, Kans.

"Her request, the watts did supply"

Russell Abert
R.F.D. 2, New Douglas, Ill.

"Watts 'altar-ed' his life by the buy"

Mrs. Robert J. Stelsel
R.F.D. 2, Waupun, Wis.

" 'Watt' wealth in this 'hope chest' did lie"

Cedric Solie
R.F.D. 2A, Stanley, Wis.

"No let down, 'cause on watts he'll rely"

Mrs. Beula Zerbe
R.F.D. 1, Herndon, Penna.

Honorable Mention

Ida Attridge, Baraboo, Wisconsin; Mrs. Ralph A. Enders, West Valley, New York; Verna Fluck, Hellertown, Penna.; Mrs. C. S. Howard, Thorsby, Alabama; Mrs. John E. Knowles, Nethart, Montana; Mahlon Lee, Curtice, Ohio; Mrs. Marie E. Martin, Baltic, Connecticut; Mrs. Frank May, Washington, Indiana; Mrs. L. T. Michaels, Kansas, Ohio; Mrs. Ferdie Pearson, Lancaster, Minnesota; Robert Radike, Marine City, Michigan; Earl Rowe, Oconomowoc, Wisconsin; Chas. L. Shippee, Holt, Missouri; Ladd Shramek, Three Oaks, Mich.; Joan Sprague, Ossian, Indiana; Hazel Starrett, Bagley, Minnesota; Wilbert Stoltenberg, Walcott, Iowa; Herbert A. Tompkins, Kalamazoo, Michigan; Mrs. Marjorie Truitt, Snowden, North Carolina.

The verse for this month's Rhyme Contest was furnished by two of our readers who didn't know they were collaborating—Mrs. E. E. Bradford, P. O. Box 711, Eastland, Texas, and Mrs. Amy Walters, 3220 W. 30 St., Indianapolis, Indiana.

Questions and Answers

Car Announcer Bell

In your April "Question and Answer" column, a simpler method of triggering a car announcer bell would be to use a system similar to that used by service stations. Use a length of neoprene hose across the driveway, plugged on one end, and filled with brake fluid. On the other end, attach a hydraulic brake switch to close your bell circuit.

M. C. W., Wisconsin
R. L. K., Louisiana

Weak Water Flow and Automatic Washers

▶Question: *How can we improve a weak water flow so as to use an automatic clothes washer satisfactorily?*

S.C.S., North Carolina

▶Answer: The following method will work if the system has satisfactory pressure at least part of the time and the weak water flow is due to restrictions in the supply lines from corrosion, weak wells, or periodic low pressures in system and the pressure tank is located at a well some distance from the house.

The only material needed is a water storage tank (80 gallon size preferred but dependent upon amount of water used) enough copper tubing or galvanized pipe and fittings to connect tank to incoming water supply, and a check valve the same size as the water supply pipe.

Install check valve in water supply line from well pump. The check valve will then retain water in the tank if the supply pressure drops. Install pipe tee in line after check valve. From tee, connect to bottom of storage tank with all other openings in tank plugged. When the water is turned on, the tank will begin to fill and will continue to do so until the normal air in the tank is compressed to the same pressure as the incoming water. The tank then acts in the same manner as the storage tank in your well house. It provides a ready and ample supply of water for your washer as needed and will refill slowly as water source or lines permit.

After prolonged use the air in the tank will be consumed but this can be corrected by emptying the tank of water and starting over again.

Drive for Grist Mill

▶Question: *I have a 24 inch grist mill powered by a 7½ hp motor that runs at 1765 rpm. I have a 3½ inch pulley on motor and a 14 inch pulley on mill. This setup runs the mill too fast, grinding my corn too fast. I have not had any previous experience with a grist mill, but I think if I had a 24 inch pulley on mill shaft, this would give better service. Please explain.*

A. C. C., Virginia

▶Answer: With the present

We're Making More Profit on Our Eggs since we installed the

Big Dutchman EGG COOLER

Says Clyde Herr of the H & M Poultry Farm, Lancaster, Pa.

You, too, can make extra profit with The Egg Cooler That Pays for Itself.

Write today for the full story:

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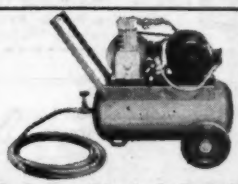

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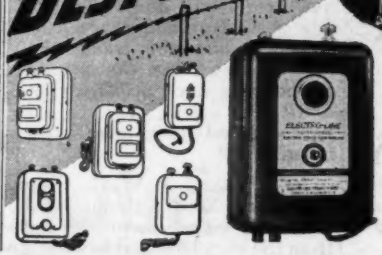

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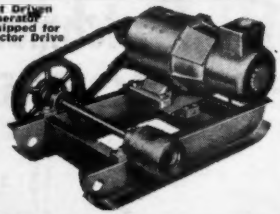

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HAMMER MILL

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Save TIME
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HORVICK MFG. CO.
MOORHEAD, MINN.

pulleys on your motor and mill, and assuming you have no belt slippage, your mill should be running at about 440 rpm. If you substituted a 24" pulley for the 14" pulley, it would run at 258 rpm. If your grist mill has a 24" stone burr, it would seem to me that both of these speeds would be too fast.

In burr mills with steel burrs, I have found that the fineness of grinding depends upon the setting of the burrs, the rate of feeding and the speed of the burrs. The best recommendation I could give you would be to find out from the manufacturer of the mill at what speed that particular mill should operate.

The length of the belt will not make much difference in your grinding except that if the belt is too short it will be inclined to slip, unless you use a belt tightener pulley. If a long flat belt is in the way of other operations, you could drive the mill very satisfactorily with shorter V-belts and save space.

Automatic Refrigerator Defrosting

▶**Question:** *Is automatic refrigerator defrosting satisfactory?*

D. C. M., Wisconsin

▶**Answer:** Automatic refrigerator defrosting has proven very satisfactory to many users. The biggest mistake made with automatic defrosting is that the refrigerator is not wiped out on the inside as often as necessary. If this is not done, the food may pick up foreign odors and tastes.

Grounding Track and Stanchions

▶**Question:** *Some time ago I read an article in your magazine regarding the grounding of stanchions and the hay track. In grounding the hay track should I attach the ground wire to the track and run it down the outside of the barn and secure it to a good ground wire; should the wire running down the outside of the barn have insulators on it? I have a long piece of old lightning rod wire; would this be suitable?*

P. W. G., Ohio

▶**Answer:** Your lightning rod cable will be satisfactory to use from the stanchion and hay track to the ground rod. This wire does not need to be insulated. The stanchions and track should be cleaned carefully and the wire clamped to these clean spots securely. The same treatment, that is, filing clean, to be given to the ground rods where the wire is attached.

The ground rod may be either a solid rod or a galvanized iron pipe. The important thing is to have that rod driven down deep enough so it will always be in contact with moist soil and then have your connections to it made carefully so there will be a minimum of resistance to the flow of current to the ground rod.

Rusty Fence Insulators

▶**Question:** *Can you give me a cheap and efficient method of removing rust deposits from electric fence insulators? Emery cloth takes time and removes the glaze. What chemical would you suggest?*

T. G. L., Maryland

▶**Answer:** Try the following solution for removing rust stains from your insulators. Ammonium citrate (20-30%) to which has been added a little household ammonia and water.

The orange is known to have 150 chemical constituents.

Keep 'em IN pastures, OUT of gardens and crop lands. High-line and battery units. Easy to install, economical to operate. Prices $12.95 to $23.95 (Western prices slightly higher). Write for folder and nearest dealer's name.

SHOX-STOK, INC.
708 MAIN ST., WELLINGTON, OHIO

"GARD" RAIN GAGE

All Plastic. Non-breakable. You can tell at a glance how much rain has fallen. Standard Model measures 1" fall. Gage for a greater fall available. Write for details. Special prices in quantities for Advertising purposes.

$1 POST PAID

Gardenhour Mfg. Co.
Waynesboro, Pa.

New *Roll-Out* Refrigerator Has Giant Freezer Below!

Hotpoint EYE-HI Refrigerator-Freezer

Rolls Out For Easy Cleaning...Puts Most-Used Foods At Easy-Reach Level...Least-Used Foods In Big Freezer At Bottom

THIS IS FOR YOU—the most convenient refrigerator-freezer ever built! **All-new design.** Entirely different from conventional refrigerator-freezers, the Hotpoint EYE-HI has a big automatic-defrosting refrigerator *at the top*, where the foods you use most are always within easy reach.

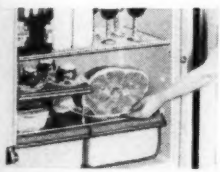
Two separate cold systems. Again unlike many combinations, the EYE-HI brings you a *true* food freezer—with its own separate cold system, heavy six-side insulation and its own separate door with special *cold-seal* latch. And it's so large you can freeze and conveniently store 123 lbs. of food!

Exclusive roll-out feature. Just release brake and your Hotpoint EYE-HI rolls out for cleaning. Compare the EYE-HI and discover *a new high in convenience.**

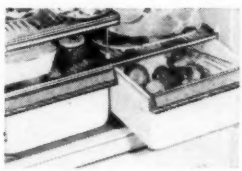
Guaranteed by Good Housekeeping

Harriet Nelson—co-star of Hotpoint's famous **OZZIE & HARRIET** program—every week on TV!

*Dealers are listed in most classified phone directories.

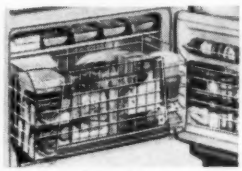


Hotpoint Stor-Mor Shelf—special slide-away feature quickly and easily converts from full-width shelf to provide extra height for bulky items such as hams, etc.



Twin Crispers—provide ideal humidity, keep vegetables crisp, fresh. Extra large, porcelain finished. Rounded corners make cleaning extra easy. De luxe Spice Gold trim.

Hotpoint Dairy-Stor—includes egg shelf, thermostatically controlled Butter Bin, two Cheese Keepers and handy Ready-Foil Dispenser for wrapping foods for freezing.



True Food Freezer—has own separate cold system. Handy juice dispenser rack and frozen food rack in door plus convenient glide-out basket put all foods *out front*.

Hotpoint

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Ranges • Refrigerators • Dishwashers • Disposalls®
Water Heaters • Food Freezers • Automatic Washers
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Farm Families Enjoy 3 Big Savings with a HOME FREEZER

1. Saves Food Values

You freeze those good home-grown fruits and vegetables fresh-picked, full of vitamin values. Then you know that—*the year around*—your folks get the vitamins they need. Freezing protects food value and flavor *best*.

2. Saves "Canning" Time

It's so much *faster* and *easier* to freeze foods! And you don't heat up the kitchen this summer weather. Now "put-up" extra fish . . . produce . . . chickens . . . meats the *nice* way—in your freezer.

3. Saves Cooking Time

Prepare large quantities when you cook, freeze part for later. Extra time for money-making work . . . or leisure time to enjoy with your family!

Ask your dealer **to show you the latest upright and chest models—and remember, a Home Freezer is cheap to operate, thanks to Cheap Electricity.**

We are sending you this magazine so that you may know the many advantages your electric service provides.

Your *Electric Service* Company

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